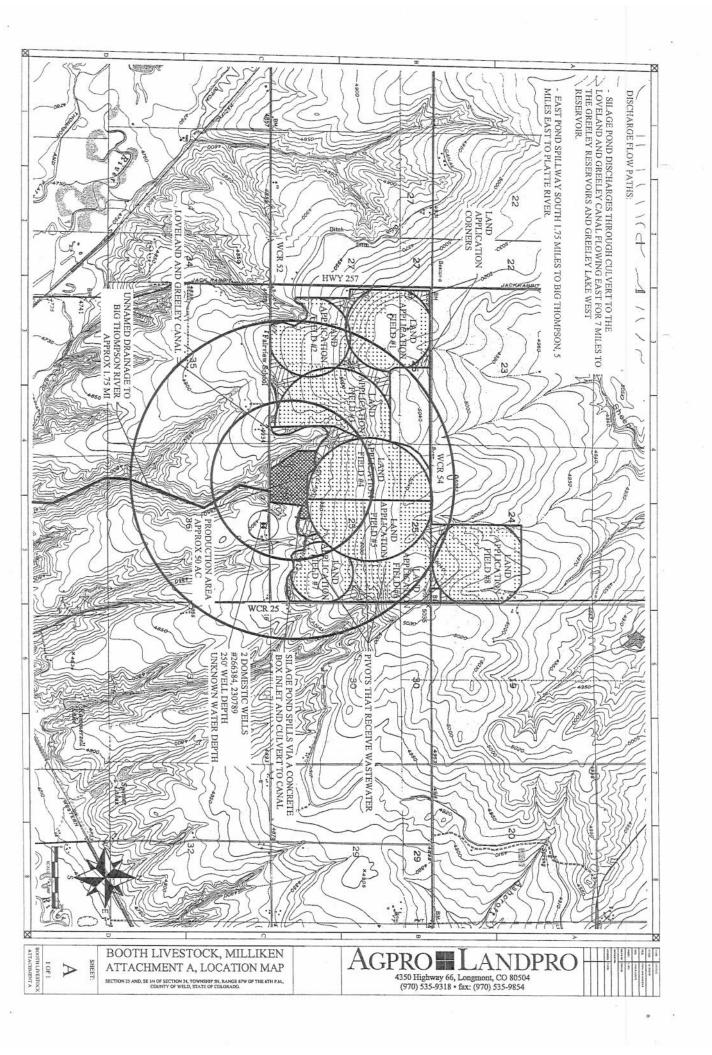
APPENDIX A

NUTRIENT MANAGEMENT PLAN TERMS (1 – 6)

1) LAND APPLICATION FIELD MAPS



APPENDIX B

NUTRIENT MANAGEMENT PLAN TERMS

2) LAND APPLICATION INFORMATION

NMP TERMS - 2) LAND APPLICATION FIELDS

All land application fields are listed below.

Table B-1 - Land Application Fields

Field Identification	Latitude ¹	Longitude ²	Spreadable Acres ³ 141	
Field 1	40.374434	-104.864990		
Field 2	40.367210	-104.864280	103	
Field 3	40.369462	-104.853476	146	
Field 4	40.372868	-104.844209	143	
Field 5	40.372199	-104.841487	146	
Field 6	40.374890	-104835326	82	
Field 7	40.367975	-104.836078	69	
Field 8	40.381788	-104.837331	130	
Corners	Associated	with fields	114 /	

¹Enter latitude in decimal degrees.

²Enter longitude in decimal degrees [number should be negative (eg. -104.3315)].

³Field acreages reduced by any setbacks, buffers, or otherwise unspreadable areas.

NMP TERMS - 2) LAND APPLICATION CROPS

Potential crops or other uses for <u>each</u> land application field are listed below. Crops in the 5 year rotation are listed per field. Additional crops that might possibly be grown on the operation are listed as field "all".

Table -B-2 - Potential Land Application Field Crops

Field Identification	Crop	Realistic Yield Goal	Yield Unit (bushels, tons, etc.)	Source (see Appendix C)	
1-8	Corn	238	bu	farm	
All	Corn Silage	28	tons	farm	
1-8	Alfalfa	5.23	tons	farm	
All	Sorghum silage	20	Tons	County Stats, Calc	
All	Sorghum grain	65	Bu	County Stats	
All	Sorghum hay	5	Tons	County stats, Calc	
All	Sudex silage	10	Tons	CSU FS	
All	Sudex hay	5	Tons	CSU FS	
All	Triticale silage	12	Tons	County Stats, Calc	
All	Triticale hay	5	Tons	County Stats, Cale	
All	Wheat silage	12	Tons	County Stats, Calo	
All	Wheat hay	5	Tons	County Stats, Calc	
All	Winter wheat grain	71	Bu	County Stats	
All	Spring wheat grain	62	Bu	County Stats	
All	Oat silage	14	Tons	County Stats, Calc	
All	Oat hay	5.2	Tons	County Stats, Calc	
All	Oat grain	91	Bu	County Stats	
All	Pasture/grass/hay	4.7	Tons	County Stats	
All	Sugar Beets	30.1	Tons	County Stats	
All	Millet	35	Bu	State Stats	
All	Sunflower	1348	Lbs	County Stats	
All	Dry Beans	2255	Lbs	County Stats	

DL = dryland, Irr = irrigated, dc = double cropped

APPENDIX C

NUTRIENT MANAGEMENT PLAN TERMS

3) EXPECTED CROP YIELD INFORMATION

Yield goals are based upon a variety of sources and are indicated in Table B-2:

Field: an average of the last 5 years of suitable data, plus10%. Years where yields were affected by drought, hail, insufficient nutrient availability or water, or other problems which would cause unnatural yield loss will not be included.

Farm: where a 5 year average does not exist but data from surrounding fields which are of similar productivity do exist, these yields will be included in the 5 year average. This is also the case where a whole farm yield is monitored rather than yields on individual fields. Where data on individual fields is kept but yield is similar across the farm, the data may be pooled together for simplicity.

Where a 5 year average has not been determined, one of several methods for determining yield goal, depending upon the availability of information, will be used.

- County or State Stats Ag statistics for the county and crop 5 years of data + 10%
- AGPRO data from nearby farms, 5 years + 10%
- CES-FS Cooperative Extension bulletin 568A or a production publication plus 10%

Calc: calculations will be used if a grain yield goal is known but not a forage yield goal for the same crop, based upon the following data:

Olsen Lab – "Guidelines for Fertilizer Recommendations, Plant Tissue Analysis, and Water Analysis" (available at their website www.olsenlab.com)

Oat hay yield goal (t/a) x 17.5 = grain yield goal (bu/a)

Forage sorghum yield goal (t/a) x 20 = grain yield

Sorghum silage yield goal $(t/a) \times 6 = grain yield$

Servi-Tech Lab (Crop File 1.02.022 attached)

Corn silage yield goal (t/a) x 7.5 = grain yield, although this will vary with moisture and quality.

Small grain hay (t/a) x 14 = grain yield

Small grain silage $(t/a) \times 6 = grain yield$

Triticale yields will be based upon potential wheat yield if Triticale yields are not known (KSU fact sheet MF-2227)

3) CROP YIELD INFORMATION REALISTIC YIELD GOAL

Corn:	
2007	no data
2008	no corn
2009	216.5 bu
2010	219 bu
2011	214.8 bu
Average	216.7 bu

238.4 bu

Corn Silage:

+10%

2007	23.21 tn/ac
2008	20.66 tn/ac
2009	29.42 tn/ac
2010	27.35 tn/ac
2011	25.68 tn/ac
Average	25.26 tn/ac
+10%	27.79 tn/ac

Alfalfa:

2007	4.439 tn/ac
2008	4.230 tn/ac
2009	4.564 tn/ac
2010	5.490 tn/ac
2011	5.056 tn/ac
Average	4.76 tn/ac
+10%	5.23 tn/ac

4) NUTRIENT BUDGET INFORMATION (yield goals are presented in Appendices B and C)

Cooperative Extension Nutrient Budget Information:

Crop:	Manure and Process Wastewater Application Rate	Description of Method to be Used		
стор.	Calculated Using:	(calculation, look-up table, etc.):		
Corn Silage	 X CSUCE Published Fertilizer Suggestions Adjacent State CE-Published Fertilizer Suggestions CNMP Method that meets USDA-NRCS standards CO NRCS NMP guidelines Department-approved Method 	35+(7.5*YG (tons/a)) Tables 7A-8 CSU Bulletin #568A		
Corn Grain	X CSUCE Published Fertilizer Suggestions ☐ Adjacent State CE-Published Fertilizer Suggestions ☐ CNMP Method that meets USDA-NRCS standards ☐ CO NRCS NMP guidelines ☐ Department-approved Method 35 + (1.2 * YG (bu/acre) Tables 7b. CSU Bulletin #5			
Sorghum Silage	X CSUCE Published Fertilizer Suggestions ☐ Adjacent State CE-Published Fertilizer Suggestions ☐ CNMP Method that meets USDA-NRCS standards ☐ CO NRCS NMP guidelines ☐ Department-approved Method	9 * YG (tons/A) Tables 7d. CSU Bulletin #568A		
Sorghum Grain	X CSUCE Published Fertilizer Suggestions ☐ Adjacent State CE-Published Fertilizer Suggestions ☐ CNMP Method that meets USDA-NRCS standards ☐ CO NRCS NMP guidelines ☐ Department-approved Method	1.2 * YG (lbs/A) Tables 7c. CSU Bulletin #568A		
Triticale Hay & Silage	 □ CSUCE Published Fertilizer Suggestions □ Adjacent State CE-Published Fertilizer Suggestions □ CNMP Method that meets USDA-NRCS standards □ CO NRCS NMP guidelines X Department-approved Method 	yield goal (lbs/a DM) * (% protein/6.25/100)/.66 multiply silage yield by 0.4 to get dry matter of silage N content/efficiency use factor Where protein is not known, 9% is used (KSU Bulleti MF-2227)		
Oat Hay & Silage	X CSUCE Published Fertilizer Suggestions ☐ Adjacent State CE-Published Fertilizer Suggestions ☐ CNMP Method that meets USDA-NRCS standards ☐ CO NRCS NMP guidelines ☐ Department-approved Method	YG (tons wet)*2000 lb/t*1.6% N/100 Multiply silage yield by 0.4 to get dry matter of silage Crop removal CSU 568A.		
Spring Seeded Small Grain	X CSUCE Published Fertilizer Suggestions ☐ Adjacent State CE-Published Fertilizer Suggestions ☐ CNMP Method that meets USDA-NRCS standards ☐ CO NRCS NMP guidelines ☐ Department-approved Method	125 lbs N per 100 bu/A, minus 20 lb N/a for each 10 bu/A difference		
		CSU Do-It-Yourself Manure Mgt Plan		
Winter Wheat Grain	 □ CSUCE Published Fertilizer Suggestions X Adjacent State CE-Published Fertilizer Suggestions □ CNMP Method that meets USDA-NRCS standards □ CO NRCS NMP guidelines □ Department-approved Method 	YG (bu/a) * 1.75 KSU Bulletin C-529 Wheat Production Handbook, 1997		

Cooperative Extension Nutrient Budget Information:

Crop:	Manure and Process Wastewater Application Rate	Description of Method to be Used
стор.	Calculated Using:	(calculation, look-up table, etc.):
Wheat	☐ CSUCE Published Fertilizer Suggestions X Adjacent State CE-Published Fertilizer Suggestions ☐ CNMP Method that meets USDA-NRCS standards	Convert yield to grain and fertilize as for grain
Silage	☐ CO NRCS NMP guidelines ☐ Department-approved Method	KSU Bulletin MF-1072 Small Grain Cereals for Forage
Alfalfa	X CSUCE Published Fertilizer Suggestions Adjacent State CE-Published Fertilizer Suggestions CNMP Method that meets USDA-NRCS standards CO NRCS NMP guidelines	((YG*2000)*(% Protein/6.25)*(soil factor))/0.66) Soil factor 0.5-0.7 for sandy to clay soil, respectively CSU Soil Publication #0.565 & 0.566
	☐ Department-approved Method	CSO Son Publication #0.363 & 0.366
Sudangrass/	 CSUCE Published Fertilizer Suggestions Adjacent State CE-Published Fertilizer Suggestions CNMP Method that meets USDA-NRCS standards 	YG (tons/a DM) * 40 lbs N/ton
Sudex Hay	☐ CO NRCS NMP guidelines ☐ Department-approved Method	KSU Bulletin MF-1036
Sunflowers	X CSUCE Published Fertilizer Suggestions X Adjacent State CE-Published Fertilizer Suggestions CNMP Method that meets USDA-NRCS standards	YG (lb/a) * 0.065 lbs N/lb grain
	☐ CO NRCS NMP guidelines ☐ Department-approved Method	High Plains Sunflower Production Handbook
Grass/hay	X CSUCE Published Fertilizer Suggestions ☐ Adjacent State CE-Published Fertilizer Suggestions ☐ CNMP Method that meets USDA-NRCS standards ☐ CO NRCS NMP guidelines	185 lbs N/ton – 40 lbs N per ton for each ton yield god less than a 4 ton yield goal (N credit to 1' soils sample)
	Department-approved Method	Reference is CSU 568A.
Small grain	X CSUCE Published Fertilizer Suggestions ☐ Adjacent State CE-Published Fertilizer Suggestions	(animals/acre) x expected weight gain (lb/hd) x 0.4 = lbs N/a OR
pasture and grain	CNMP Method that meets USDA-NRCS standards CO NRCS NMP guidelines Department-approved Method	(Winter wheat recommendation plus 30-50 lbs N) Soil publication #0.565
Dry beans	□ CSUCE Published Fertilizer Suggestions □ Adjacent State CE-Published Fertilizer Suggestions □ CNMP Method that meets USDA-NRCS standards □ CO NRCS NMP guidelines X Department-approved Method	Non-irrigated Inoculated - 40 lbs N/acre Non-irrigated Non-inoculated - 70 lbs N/acre Irrigated crops Yield Goal (lbs/a) X .05
		NDSU SF-720

Formulas for calculating nutrient budgets

- ☐ CSUCE Published Fertilizer Suggestions
- ☐ Adjacent State CE-Published Fertilizer Suggestions
- □ CNMP Method that meets USDA-NRCS standards
- ☐ CO NRCS NMP guidelines
- X Department-approved Method

Olsen Laboratories current formulas, lbs. N/yield unit (where not otherwise specified, multiply by yield goal as presented in Appendices B and C)

Corn silage – multiply silage yield goal by 7 and use grain recommendation

Corn grain – $\frac{(0.90)(YG, bu/a)}{1-(0.0008)(YG, bu/a)}$ + 50 = lb N/bu

Sorghum/Sudex silage – multiply silage yield goal by 6 and use grain recommendation

Sorghum/Sudex hay – multiply hay yield goal by 20 and use grain recommendation

Sorghum grain - (YG)(1.2 N/bu) + 30 lb N

Triticale silage - 10 lb N/ton

Triticale hay -30 lb N/ton

Summer fallow wheat grain – 1.75 lbs N/bu

Continuous wheat grain – 2.0 lbs N/bu (includes nitrogen for stubble decomposition)

Spring wheat grain - (YG)(2.4 lbs N/bu) - (OM-1)*20

Wheat silage - 10 lb/ton

Wheat hay - 30 lb N/ton

Small grain grazing – 40 lbs N/a (not dependent on yield goal)

Oat silage - 9 lbs N/ton

Oat hay – multiply hay yield goal by 17.5 and use grain recommendation

Oat grain - 1.0 lb N/bu

Irrigated grass – 45 lbs N/ton

Dryland grass - 30 lbs N/ton

Sugar beets – (YG)(9 lbs N/ton) – 30*%OM – Residual N*1.67(2' soil sample)

Millet – 1.5 lb N/bu

Sunflower – 0.06 lb N/lb

Dry beans – (YG, bu)(2.0 lb N/bu) (+20 lbs N for kidney beans, -30 lbs N if inoculated, +30 lbs

N on sandy soils)

Formulas for calculating nutrient budgets:

- ☐ CSUCE Published Fertilizer Suggestions
- ☐ Adjacent State CE-Published Fertilizer Suggestions
- ☐ CNMP Method that meets USDA-NRCS standards
- ☐ CO NRCS NMP guidelines
- X Department-approved Method

ServiTech Laboratories current formulas, lbs. N/yield unit (multiply by yield goal as presented in Appendices B and C)

Corn silage - 10 lbs. N/Ton

Corn grain - 1.3 lb N/bu

Sorghum silage – 9 lb N/ton

Sorghum hay – 25 lb N/ton

Sorghum grain - 1.2 lb N/bu

Sudex silage - 7.5 lb N/ton

Sudex hay - 25 lb N/ton

Triticale silage – 10 lb N/ton

Wheat silage - 10 lb N/ton

Winter wheat grain - 1.75 lbs N/bu

Spring wheat grain -2.0 lbs N/bu

Small grain hay (triticale) - 26 lb N/ton

Oat silage – 12 lb N/ton

Oat hay - 25 lb N/ton

Oat grain - 1.0 lb N/bu

Pasture/Grass/Native grass – 40 lbs N/ton

Sugar beets – 7.5 lbs N/ton

Millet - 1.7 lb N/bu

Sunflower - 0.05 lb N/lb

Dry beans – 0.04 lb N/lb

Formulas for calculating nutrient budgets:

Midwest Laboratories current formulas, lbs. N/yield unit (multiply by yield goal as presented in Appendices B and C)

Corn silage – 9.5 lbs. N/Ton

Corn grain - 1.3 lb N/bu

Sorghum silage – 7 lb N/ton

Sorghum grain - 1.3 lb N/bu

Sudex hay - 15 lb/ton

Triticale silage – convert yield to grain, use grain recommendation

Triticale grain - 1.5 lb N/bu

Winter wheat grain – 2.3 lbs N/bu

Wheat silage – convert yield to grain, use grain recommendation

Oat grain - 1.2 lb N/bu

Oat silage - convert yield to grain, use grain recommendation

Pasture/Grass/Native grass – 40 lbs N/ton

Sugar Beets - 8.5 lb N/ton

Millet - 1.6 lbs N/bu

Sunflower – 0.06 lbs N/lb

Dry beans - 0.4 lbs N/bu

Nitrogen Credits

Available Nitrogen in Wastewater (CSU Bulletin 568A, plus personal communication)

1st year N availability in wastewater, sprinkler applied (Organic N * 30%) + (NH₄-N * 55%)

1st year N availability in wastewater, flood applied (Organic N * 30%) + (NH₄-N * 78%)

2nd year N availability in wastewater (Organic N * 10%)

Available Nitrogen in Manure (minimum values)

1st year N availability in manure (Organic N * 25%) + (NH₄-N * % available below)

2nd year N availability in manure (Organic N * 10%)

Available Nitrogen in Compost (minimum values)

1st year N availability in manure (Organic N * 20%) + (NH₄-N * % available below)

2nd year N availability in manure (Organic N * 10%)

NH4-N % available, solid manure and slurry (UN NebGuide G1335).

Inject or immediate incorporation - 95%

Incorporate within 1 day – 50-70%

Incorporate 2-5 days - 0-50%

Incorporate >5 days - 0%

The laboratory's plant available nutrient schedule may also be used.

In the near future these mineralization factors may change, and this nutrient management plan will use the revised values from CSU. In fields which receive a similar amount of manure or wastewater each year, the 2 year mineralization rate may be added together and credited all in one year for simplicity.

Legume Credit- Previous crop, alfalfa

>80% stand 100-140 lbs N/A 60-80% stand 60-100 lbs N/A <60% stand 30-60 lbs N/A

Alfalfa protein to be used in the absence of a forage test (CSU no. 0.565)

Maturity	% Crude Protein	% N
Pre-bud	22-24	3.5-3.8
Bud	20-22	3.2-3.5
Early bloom	17-19	2.7-3.0
Midbloom	14-16	2.2-2.6
Full bloom	<14	< 2.2

Additional nitrogen needs

Crop decomposition

Up to 20 lbs/A additional nitrogen may need to be applied to carbonaceous crop residues.

Starter fertilizer

Regardless of the recommendations for nutrient application, up to 35 lbs of N and 35 lbs P_2O_5 may be added as a starter fertilizer at or just prior to planting in order to ensure nutrient availability to seedlings, promoting a more vigorous plant more capable of utilizing nutrients already in the soil. Any commercial fertilizer applied will be counted towards the total recommendation and subtracted from the gross recommendation in the N credit section ("other") of the rate determination sheet. If 35 lbs N are not required to grow the crop, this amount of starter will still be used.

Small grain grazing

Where small grains are fall grazed, additional nutrient needs based upon animal intake or a flat rate (30-50 lbs N/a) may be applied as outlined in the formulas for CSU and Olsen Lab.

In Season N adjustments

The formulas provided represent the maximum amount of N to be applied with advanced planning. It is not uncommon for nitrogen rates to be adjusted during the growing season. The following outlines procedures which may be used to make in season adjustments. Only one test will be used at any given time of plant growth to provide a recommendation. However, additional tests may be used at other stages of crop growth. For instance, it is possible that a soil test at side dressing could indicate the soil is likely to have enough nitrogen to grow a crop, but a tissue test at the reproductive phase of growth could show the plant is now deficient in nitrogen and needs more N.

Pre-Sidedress Nitrate Test (PSNT)

1 foot soil samples are analyzed for nitrate when corn is 6 to 12" tall. Guidance documents from Cooperative Extension, either from CSU or from a surrounding state, will be used to interpret results.

Tissue testing

Plant samples will be analyzed for nitrogen at the appropriate time, and from the appropriate location on the plant for the given crop. The results will be compared with expected nitrogen content for the plant at the specified growth stage. Deficiencies will be managed with additional N.

Leaf chlorophyll meters & near infrared sensors

There are a number of meters on the market which detect the amount of chlorophyll in leaves. By comparing the chlorophyll meter readings from the reference strips to those from the rest of the field, N sufficiency and the need for additional N can be determined. Pennsylvania State University's tool may be used at first side dress when the corn is at the V6-V8 growth stages (Fact Sheet 53: *The Early Season Chlorophyll Meter Test for Corn*) and Purdue University's tool may be used later in the season when the crop is at the V8-V12 growth stages through pollination (Fact Sheet: AY-317-W, *Determining Nitrogen Fertilizer Side dress Application Needs in Corn Using a Chlorophyll Meter*). Interpretation of NIR sensors will be made with the latest available data.

Visual analysis

Visual symptoms are an excellent diagnostic tool to determine nutrient limitations in crop fields. The visual characteristics displayed when plants are nutrient deficient vary by plant species and variety, stage of growth, and severity of the deficiency, and they are well documented and available as a reference from numerous Extension and industry sources. Visual symptoms of nitrogen deficiency may be used to adjust nitrogen recommendations. Many factors will be taken into account to determine the need for nitrogen, including but not limited to unusual weather conditions, previous crop history, source and amount of nitrogen already applied, crop stage of growth, soil physical properties, disease, insect, herbicide injury, and other factors related to root growth. Typically 20-40 lbs N will be recommended.

Nitrogen reference strip

Several reference strips are established through the field where more than enough nitrogen has been applied and is known to not be limiting. These strips are established for comparison to potential problem spots in the field. It is useful to have reference strips when interpreting soil tests and tissue tests. It is crucial that reference strips be established for a chlorophyll meter be calibrated for each field, previous crop, hybrid, fertilizer and/or manure application and differing soil types. If reference strips are utilized, they will be 12,000 square feet for each 60 acres of crop of each hybrid. If the reference strip is developed using commercial fertilizer, it will receive 10-25% above the recommended rate for the field (Purdue University Fact Sheet AY-317-W), and if manure is used to produce the reference strip, it will be applied at 100% above the recommended rate (Iowa State University Fact Sheet PM 2026, Sensing Nitrogen Stress in Corn). This latter rate is appropriate because there are many sources of variability when using manure, and the reference strip must be fully fertilized.

APPENDIX E

NUTRIENT MANAGEMENT PLAN TERMS

5) COLORADO PHOSPHORUS INDEX RISK ASSESSMENT

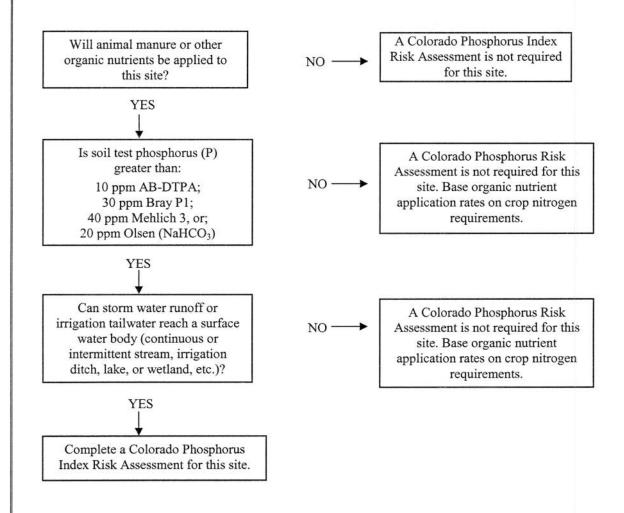
Results from the assessment are provided on the Rate Determination Sheets in Appendix F.

5) PHOSPHORUS AND NITROGEN TRANSPORT

Application rates for manure and process wastewater applied to land application sites minimize phosphorus and nitrogen transport from the application sites to surface waters. An initial assessment of the potential for phosphorus and nitrogen transport risk to surface water will be made prior to manure or process wastewater being applied to an application site. [Regulation No. 61.17(8)(b)(xii)(B)]

There is currently no published tool suitable for assessing nitrogen transport risk. Phosphorus and nitrogen transport risk will be assessed using the Colorado Phosphorus Index Risk Assessment.

The following flow chart will be used to determine if a phosphorus risk assessment must be completed for a land application site:



5) PHOSPHORUS AND NITROGEN TRANSPORT (continued)

For land application fields that require a Colorado Phosphorus Index Risk Assessment to be completed, the following applicable best management practices will be incorporated:

- (A) Phosphorus-based manure and process wastewater application rates may be made to application sites where the risk of off-site phosphorus transport is scored as high.
- (B) No application of manure or process wastewater will be made to land application sites where the risk of off-site phosphorus transport is rated as very high¹.
- (C) No application of manure or process wastewater will be made to a land application site where the risk of off-site nitrogen transport to surface water is not minimized.
- (D) Where a multi-year phosphorus application was made to a land application site, no additional manure or process wastewater will be applied to the same site in subsequent years until the applied phosphorus has been removed from the site via harvest and crop removal.

After completing an initial assessment of the potential for phosphorus and/or nitrogen transport from a land application site to surface water, additional assessments will be made every five years or at the frequency described below, whichever is sooner:

Cause for Re-Assessment	Frequency
Where a crop management change has occurred	For phosphorus - Assess within one year after such a change would reasonably result in an increase in the transport risk assessment score. For nitrogen – Assess within one year after such a change would reasonably result in the nitrogen transport to surface water not being minimized.
Where a phosphorus transport risk assessment score was very high	Assess phosphorus transport risk within six months of intending to apply manure or process wastewater, except where the initial assessment is scored as very high, then there shall be a three-year period within which to manage the site for the purpose of lowering the phosphorus transport risk assessment rating to high or less. During this period, manure or process wastewater may be applied to the site at either nitrogen- or phosphorus-based rates.
Where a nitrogen transport risk assessment reveals that nitrogen transport to surface water is not minimized	Assess nitrogen transport risk within six months of intending to apply manure or process wastewater.

ASSOCIATED RECORDS:

1) Copies of phosphorus/nitrogen transport risk assessments are maintained on-site.

Where the initial assessment of a land application site scores very high, the facility has a three-year period within which to manage the site for the purpose of lowering the phosphorus transport risk assessment rating to high or lower. During this period, manure or process wastewater may be applied to the site at either nitrogen- or phosphorus-based rates.

APPENDIX F

NUTRIENT MANAGEMENT PLAN TERMS

5) FIELD NUTRIENT BALANCE CALCULATIONS

See Rate Determination Sheets

The facility uses manure on a couple of fields each year, but not on all of them. Wastewater may be applied to fields 4-8. Recommendations were made for manure on fields 1-3, and for wastewater and manure on fields 4-8. The recommendations presented in the NMP are not additive. On a year by year basis, adjustments will be made depending upon how much manure will be applied. When manure is applied, approximately 20 tons per acre is applied, with the remainder of the nitrogen requirements being met through fertilizer and/or wastewater applications.

Corners have no recommendations currently developed. If manure is applied to these fields, they will be soil sampled, and recommendations will be developed at that time.

The planned crop rotation is:

Field	2012	2013	2014	2015	2016
1	Corn	Corn	Corn	Alfalfa	Alfalfa
2	Corn	Corn	Corn	Alfalfa	Alfalfa
3	Corn	Corn	Alfalfa	Alfalfa	Alfalfa
4	Corn	Alfalfa	Alfalfa	Alfalfa	Alfalfa
5	Alfalfa	Alfalfa	Alfalfa	Alfalfa	Alfalfa
6	Alfalfa	Alfalfa	Alfalfa	Corn	Corn
7	Alfalfa	Alfalfa	Alfalfa	Corn	Corn
8	Alfalfa	Alfalfa	Alfalfa	Corn	Corn

AGPRO fessionals, LLC	Field: Farm:	1 Booth-Milliken	•	
1 Field Information				
1. Field Information:				
Crop: Corn ▼ Crop Year: 2012 ▼	Acres:	141	~	
Soil name/texture: Loam ▼	Previous Cro	0.		
Soil test results Date N(as NO3-N), ppm P (Olsen) 11/2/2011 11.1 12	, ppm	K (NH4OAc), 203	ppm	pH 8
P-Index Score 9 Application rate based upo	n Nitrogen			
2. Nutrient Needs:				
a) Expected yield (avg. of last 5 yrs + 5%)238Tons, Lbs b) Nutrient recommendations Formula Used: Olsen Laboratory Recommendations	or Bu. / Acre	_	N (lb/acre)	P2O5 (lb/a) 40
5,5597				
c) Special nutrient needs above recommendations				
d) Total nutrient needs		SA-COL	314	40
2 Nitragan Cradita		14		
3. Nitrogen Credits:				
a) Residual soil nitrate credit* (1 foot for grass, 2 feet for all others)	11.1	ppm NO3	40	<u>-</u> 2
b) Irrigation water credit (2.7 lb N per ac-ft x ppm NO3-N x ac-ft) af=	0 0	ppm NO3	0	-
c) Previous legume crop (see Table 11 in CSU Bulletin NO. 568A) d) Previous manure application credit (applic rate x org N x % min)				
Previous Year LBS Organic N Applied	0	10% avail	0	
e) Other: alfalfa credit f) Total nitrogen credit			65 105	
*if not included in 2b above. Do not use N credits twice, ie. From tables 7a-	7e and here.	-		•
*residual nitrate ppm is a total value for depth indicated, or a weighted aver	age of the top 2	feet then double	d for corn and	sorghum crops
4. Recommended Nutrient Application Rate:		-		
a) Total nutrient need minus Total nutrient credit (lb/acre)		_	209	40
Sample ID: <i>Milliken</i> Lab #: 19255				
Application Method: Broadcast manure w/o incorp ▼				
Application Metriou.				
II / 1	00 %			
	4 lbs/Ton 5 %			
	.2 lbs/Ton			
f) Total available N ([c x {1-b}] + [d x e])	lbs/Ton	_	4.6	
Recommended manure application rate (a/f)		e, max allowed ecommended	20.0	tons/a
		ecommended		lbs N/a
g) P2O5 available 9.52 lbs/Ton Analysis 11.9 h) Additional P2O5 needs from commercial fertilizer -15	lbs/Ton 0 lbs/acre		s P2O5/acre	190
P is 80% available when applied frequently, 60% available when applied in		sis P2O5 lbs/ton	x 0.6 or 0.8 =	available P2O5)
Predicted method, form, and timing of application:	- quartery (arrary		2.2.3. 0.0	
Applied with appendent runk in fall or anxion				
Applied with spreader truck in fall or spring				

	Field.			
\triangle CPPO	Field: Farm:	1 Booth-Milliken	•	
AGPRO fessionals, LLC	i di iii.	DOOLT PHINKETT		
1. Field Information:				
Crop: Corn ▼ Crop Year: 2013 ▼	Acres:	141		
Soil name/texture: Loam Through 2014	Previous Crop:		•	
Soil test results Date N(as NO3-N), ppm P (Olsen), 11/2/2011 11.1 12	ppm	K (NH4OAc), 203	ppm į	oH 3
P-Index Score 9 Application rate based upon	Nitrogen	-		
2. Nutrient Needs:			N (lb/acre)	PaOs (lb/a)
a) Expected yield (avg. of last 5 yrs + 5%)238 Tons, Lbs	or Bu. / Acre			P2O5 (lb/a)
b) Nutrient recommendations Formula Used: Olsen Laboratory Recommendations		-	314	40
. Similar osca.				
c) Special nutrient needs above recommendations		7/		
d) Total nutrient needs			314	40
3. Nitrogen Credits:				
a) Residual soil nitrate credit* (1 foot for grass, 2 feet for all others)	11.1	ppm NO3	40	
b) Irrigation water credit (2.7 lb N per ac-ft x ppm NO3-N x ac-ft) af=	0 0	ppm NO3	0	
c) Previous legume crop (see Table 11 in CSU Bulletin NO. 568A) d) Previous manure application credit (applic rate x org N x % min)				
Previous Trandre application credit (applic rate x org N x % min) Previous Year LBS Organic N Applied	400	10% avail	40	
e) Other: none				
f) Total nitrogen credit			80	
*if not included in 2b above. Do not use N credits twice, ie. From tables 7a- *residual nitrate ppm is a total value for depth indicated, or a weighted avera		et then double	d for corn and s	orahum crops
4. Recommended Nutrient Application Rate:	ige of the top 2 ic	—	Tior corriana s	orgram oropo
a) Total nutrient need minus Total nutrient credit (lb/acre)			234	40
Sample ID: <i>Milliken</i> Lab #: 19255		_		
	-			
Application Method: Broadcast manure w/o incorp ▼	_			
b) Expected NH3-N volatilization10	0 %			
But the state of the control of the	<u>4</u> lbs/Ton 5 %			
	2 lbs/Ton			
f) Total available N ([c x {1-b}] + [d x e])	Ibs/Ton	<u> </u>	4.6	
Recommended manure application rate (a/f)		max allowed commended	20.0 1	t/a
	fertilizer, rec		142.0	
g) P2O5 available 9.52 lbs/Ton Analysis 11.9 h) Additional P2O5 needs from commercial fertilizer -15	_ lbs/Ton 0 lbs/acre	Ib	s P2O5/acre	190
P is 80% available when applied frequently, 60% available when applied infi		is P2O5 lbs/ton	x 0.6 or 0.8 = a	vailable P2O5)
Predicted method, form, and timing of application:				
Applied with spreader truck in fall or spring				

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Manure Application - Rate	termina	ation Sheet				
			Field:	1		
ACPRO			Farm:	Booth-Milliken	-	
AGPRO fession	nals, LLC		i diiii.	Dodd' i iiiiikeri		
1. Field Information:						
Crop: Alfalfa ▼ C	Crop Year:	2015	Acres:	141		
Soil name/texture: Loam		through 2016	Previous Crop			
Soil test results Date N 11/2/2011	l(as NO3-N), _l 11.1	507	sen), ppm 2	K (NH4OAc) 203	, ppm	pH s
11/2/2011	11.1		12	203		0
P-Index Score9	Applica	ation rate based	upon Nitrogen	_		
2. Nutrient Needs:						
		- 00 T			N (lb/acre)	P2O5 (lb/a)
a) Expected yield (avg. of last 5 yrs + 5%)b) Nutrient recommendations		5.23 Tons,	Lbs or Bu. / Acre		274	150
Formula Used: (((YG*2000)*(%F	Protein/6.25)*	(0.6))/0.66)		-	214	100
CSU Soil Publica		2. 22. 2				
c) Special nutrient needs above recomm	ondations					
d) Total nutrient needs	lendations			-	274	150
,			*	-		
3. Nitrogen Credits:						
a) Residual soil nitrate credit* (1 foot for	arass 2 feet	for all others)	11.1	ppm NO3	40	
b) Irrigation water credit (2.7 lb N per ac-ft x			0 0	ppm NO3	0	
c) Previous legume crop (see Table 11 ir						
d) Previous manure application credit (ap			400	10% avail	40	
<u> </u>	revious rear Lb3	Organic N Applied	400	10% avaii	40	
e) Other:						
f) Total nitrogen credit				_	80	
*if not included in 2b above. Do not use I				fact than daubl	ad for earn and m	orahum orana
*residual nitrate ppm is a total value for description 4. Recommended Nutrient Application		a, or a weignted a	average of the top 2 i	eet then double	ed for corn and s	orgnum crops
				-		
a) Total nutrient need minus Total nutr	rient credit (II	b/acre)		-	194	150
Sample ID: Millike	en	Lab #: 192	255			
Sumple 15.	-					
Application Method: Br	roadcast manure	w/o incorp	<u> </u>			
L. F			100.0/			
b) Expected NH3-N volatilization c) NH4-N available from manure		-	100_% 1.14_lbs/Ton			
d) Expected mineralization rate			25 %			
e) Organic N available from manure		-	18.2 lbs/Ton			
f) Total available N ([c x {1-b}] + [d x e])			lbs/Ton	<u>-</u>	4.6	
Recommended manure application rat	te (a/t)			Ton/acre	43	
		Analysis1	1.9 lbs/Ton	1	bs P2O5/acre	406
h) Additional P2O5 needs from commercial			-256 Ibs/acre	-:- DOOE " "		wellahle Door
P is 80% available when applied frequent Predicted method, form, and timing of applications		able when applie	a intrequently (analy:	sis P2O5 lbs/to	$n \times 0.6 \text{ or } 0.8 = 8$	avallable P205)
in redicted method, form, and timing of ap	plication:					
Manure not likely to be applied	d, but if so, in	the fall of the 20	15 crop year, via spr	eader truck		

Manure Application - Rate termination Sho	eet			
	Field:	2		
ACPRO	Farm:	Booth-Milliken	_	
AGPRO fessionals, LLC				
1. Field Information:				
1. Field information.				
Crop: Corn ▼ Crop Year: 2012 ▼	Acres:	103		
Soil name/texture: Loam ▼	Previous Crop:	Alfalfa		
	(Olsen), ppm	K (NH4OAc),	ppm	рН
11/2/2011 9.4	35	211		8
P-Index Score10 Application rate ba	sed upon Nitrogen	•		
2. Nutrient Needs:				
a) Expected yield (avg. of last 5 yrs + 5%) 238 T	ons, Lbs or Bu. / Acre		N (lb/acre)	P2O5 (lb/a)
b) Nutrient recommendations	ons, Lbs or bu. / Acre		314	0
Formula Used: Olsen Laboratory Recommendations		-		
*				
c) Special nutrient needs above recommendations				
d) Total nutrient needs		-	314	0
3. Nitrogen Credits:				
a) Residual soil nitrate credit* (1 foot for grass, 2 feet for all others	9.4	ppm NO3	34	
b) Irrigation water credit (2.7 lb N per ac-ft x ppm NO3-N x ac-ft) af=	0 0	ppm NO3	0	
c) Previous legume crop (see Table 11 in CSU Bulletin NO. 568A) d) Previous manure application credit (applic rate x org N x % min)				
Previous Year LBS Organic N App	olied 0	10% avail	0	
		. —		
e) Other: alfalfa credit f) Total nitrogen credit			65 99	
*if not included in 2b above. Do not use N credits twice, ie. From ta	ables 7a-7e and here.	-	99	
*residual nitrate ppm is a total value for depth indicated, or a weigh		et then doubled	for corn and s	orghum crops
4. Recommended Nutrient Application Rate:		_		
a) Total nutrient need minus Total nutrient credit (lb/acre)		-	215	0
Sample ID: <u>Milliken</u> Lab #:	19255			
Application Method: Broadcast manure w/o incorp				
, pp. said and a said a				
b) Expected NH3-N volatilization	100 %			
c) NH4-N available from manure d) Expected mineralization rate	1.14 lbs/Ton 25 %			
e) Organic N available from manure	18.2 lbs/Ton			
f) Total available N ([c x {1-b}] + [d x e])	lbs/Ton	-	4.6	
Recommended manure application rate (a/f)		max allowed	47	
	Manure, rec fertilizer, rec		123.2	tons/a lbs N/a
g) P2O5 available9.52 lbs/Ton Analysis	11.9 lbs/Ton		s P2O5/acre	190
h) Additional P2O5 needs from commercial fertilizer	-190 lbs/acre	D005# #	00 00	"
P is 80% available when applied frequently, 60% available when applied frequently fre	oplied infrequently (analysi	s P2O5 lbs/ton	$\times 0.6 \text{ or } 0.8 = 8$	available P2O5)
Predicted method, form, and timing of application:				
Applied with spreader truck in fall or spring				

Manure Application - Rate _ Jtermination Sheet Field: 2 Farm: Booth-Milliken Manure Application - Rate _ Jtermination Sheet Field: 2 Farm: Booth-Milliken
1 101 Notessionals, LLC
DEVELOPERS OF AGRICULTURE
1. Field Information:
1. Flore information.
Crop: Corn ▼ Crop Year: 2013 ▼ Acres: 103
Soil name/texture: Loam ▼ through 2014 Previous Crop: Corn ▼
Soil test results Date N(as NO3-N), ppm P (Olsen), ppm K (NH4OAc), ppm pH 11/2/2011 9.4 35 211 8
11/2/2011 9.4 35 211 8
P-Index Score10 Application rate based upon Nitrogen
2. Nutrient Needs:
N (lb/acre) P2O5 (lb/a) P2
b) Nutrient recommendations 314 0
Formula Used: Olsen Laboratory Recommendations
c) Special nutrient needs above recommendations
d) Total nutrient needs 314 0
3. Nitrogen Credits:
o. Mulogen orealis.
a) Residual soil nitrate credit* (1 foot for grass, 2 feet for all others) 9.4 ppm NO3 38
b) Irrigation water credit (2.7 lb N per ac-ft x ppm NO3-N x ac-ft) af= 0 0 ppm NO3 0 c) Previous legume crop (see Table 11 in CSU Bulletin NO. 568A)
d) Previous manure application credit (applic rate x org N x % min)
Previous Year LBS Organic N Applied 400 10% avail 40
) OII
e) Other: f) Total nitrogen credit 78
*if not included in 2b above. Do not use N credits twice, ie. From tables 7a-7e and here.
*residual nitrate ppm is a total value for depth indicated, or a weighted average of the top 2 feet then doubled for corn and sorghum crops
4. Recommended Nutrient Application Rate:
a) Total nutrient need minus Total nutrient credit (lb/acre) 236 0
Sample ID: Milliken Lab #: 19255
Application Method: Broadcast manure w/o incorp ▼
b) Expected NH ₃ -N volatilization 100 %
c) NH4-N available from manure 1.14 lbs/Ton
d) Expected mineralization rate 25 %
e) Organic N available from manure 18.2 lbs/Ton
f) Total available N ([c x {1-b}] + [d x e])lbs/Ton4.6 Recommended manure application rate (a/f)Ton/acre, max allowed52
Manure, recommended 20.0 tons/a
fertilizer, recommended 144.4 lbs N/a
g) P2O5 available 9.52 lbs/Ton Analysis 11.9 lbs/Ton lbs P2O5/acre 190 h) Additional P2O5 needs from commercial fertilizer -190 lbs/acre
P is 80% available when applied frequently, 60% available when applied infrequently (analysis P2O5 lbs/ton x 0.6 or 0.8 = available P2O5)
Predicted method, form, and timing of application:
Applied with spreader truck in fall or spring

Manure Application - Rate _ termination Sheet				
	Field:	2		
AGPRO fessionals, LLC	Farm:	Booth-Milliken	-	
DEVELOPERS OF AGRICULTURE				
1. Field Information:				
Crop: Alfalfa ▼ Crop Year: 2015 ▼	Acres:	103		
Soil name/texture: Loam Through 2016	Previous Crop	_	▼	
Soil test results Date N(as NO3-N), ppm P (Olse		K (NH4OAc),	ppm	рН
11/2/2011 9.4 35		211		8
P-Index Score10 Application rate based யு	oon Nitrogen	_		
2. Nutrient Needs:				
a) Expected yield (avg. of last 5 yrs + 5%) 5.23 Tons, Lt	oo or Du / Aoro		N (lb/acre)	P2O5 (lb/a)
a) Expected yield (avg. of last 5 yrs + 5%) Tons, Ltb) Nutrient recommendations	os or Bu. / Acre		274	0
Formula Used: (((YG*2000)*(%Protein/6.25)*(0.6))/0.66)		8		
CSU Soil Publication # 0.565				
c) Special nutrient needs above recommendations				
d) Total nutrient needs		<u>-</u>	274	0
2. Nitter and Creditor				
3. Nitrogen Credits:				
a) Residual soil nitrate credit* (1 foot for grass, 2 feet for all others)	9.4	ppm NO3	34	
b) Irrigation water credit (2.7 lb N per ac-ft x ppm NO3-N x ac-ft) af=	0 0	ppm NO3	0	
c) Previous legume crop (see Table 11 in CSU Bulletin NO. 568A) d) Previous manure application credit (applic rate x org N x % min)				
Previous Year LBS Organic N Applied	400	10% avail	40	
e) Other: f) Total nitrogen credit			74	
*if not included in 2b above. Do not use N credits twice, ie. From tables 7	a-7e and here.	-		*
*residual nitrate ppm is a total value for depth indicated, or a weighted ave	erage of the top 2 f	eet then doubled	d for corn and s	orghum crops
4. Recommended Nutrient Application Rate:		-		
a) Total nutrient need minus Total nutrient credit (lb/acre)		_	200	0
	<u>-</u> -			
Sample ID: <u>Milliken</u> Lab #: 1925	<u> </u>			
Application Method: Broadcast manure w/o incorp ▼				
	100 % .14 lbs/Ton			
d) Expected mineralization rate	25 %			
[] [[] [8.2 lbs/Ton		4.0	
f) Total available N ([c x {1-b}] + [d x e]) Recommended manure application rate (a/f)	Ibs/Ton	Ton/acre	4.6 44	
(,		_		
N BOOS available 0.50 lb-77-2 Analysis 44.0	lha/T	n.	a DoOr	440
g) P2O5 available 9.52 lbs/Ton Analysis 11.9 h) Additional P2O5 needs from commercial fertilizer	lbs/Ton 419 lbs/acre	di	s P2O5/acre	419
P is 80% available when applied frequently, 60% available when applied i		sis P2O5 lbs/ton	x 0.6 or 0.8 = 8	available P2O5)
Predicted method, form, and timing of application:				
Manure not likely to be applied, but if so, in fall for 2015 crop, t	ieina enroador tras	·b		1
Manure not likely to be applied, but it so, in fall for 2015 crop, t	using spreader truc	···		

Manure Application - Rate Latermination Sheet				
	Field:	3		
ACPRO: 1 HG	Farm:	Booth-Milliken	-	
AGPRO fessionals, LLC				
1. Field Information:				
Crop: Corn ▼ Crop Year: 2012 ▼	Acres:	146		
Soil name/texture: Loam ▼ through 2013	Previous Cro		-	
Soil test results Date N(as NO3-N), ppm P (Olsen)		K (NH4OAc),	ppm	pH
3/7/2012 20.6 7	**************************************	110	-	8
P-Index Score N/A (low soil P) Application rate based upo	n Nitrogen	_		
2. Nutrient Needs:				
(a) Expected yield (a start 5 a s 5%)	D / A		N (lb/acre)	P2O5 (lb/a)
a) Expected yield (avg. of last 5 yrs + 5%)238Tons, Lbs b) Nutrient recommendations	or Bu. / Acre		314	80
Formula Used: Olsen Laboratory Recommendations		_		
*				
c) Special nutrient needs above recommendations				
d) Total nutrient needs		_	314	80
3. Nitrogen Credits:				
a) Residual soil nitrate credit* (1 foot for grass, 2 feet for all others)	20.6	ppm NO3	74	
b) Irrigation water credit (2.7 lb N per ac-ft x ppm NO3-N x ac-ft) af=	0 0	ppm NO3	0	
c) Previous legume crop (see Table 11 in CSU Bulletin NO. 568A)				
d) Previous manure application credit (applic rate x org N x % min) Previous Year LBS Organic N Applied	400	10% avail	40	
Frevious real Ebe organic (V) ppilos	400			eri.
e) Other:				
f) Total nitrogen credit	7	_	114	
*if not included in 2b above. Do not use N credits twice, ie. From tables 7a- *residual nitrate ppm is a total value for depth indicated, or a weighted aver		feet then double	d for corn and	sorahum crons
4. Recommended Nutrient Application Rate:	age of the top 2	root trion dodoro	a for com ana v	sorgnam or ope
T-4-1 4-1		_	200	
a) Total nutrient need minus Total nutrient credit (lb/acre)		-	200	80
Sample ID: Milliken Lab #: 19255				
	_			
Application Method: Broadcast manure w/o incorp ▼	_			
b) Expected NH3-N volatilization 10	00 %			
II 6) 25)	4 lbs/Ton			
	<u>25</u> %			
	. <u>2</u> lbs/Ton		4.0	
f) Total available N ([c x {1-b}] + [d x e]) Recommended manure application rate (a/f)	_ lbs/Ton	e, max allowed	4.6	
Recommended manure application rate (an)		ecommended _		tons/a
		ecommended		lbs N/a
g) P2O5 available 9.52 lbs/Ton Analysis 11.9	_ lbs/Ton	11	os P2O5/acre	190
	0 lbs/acre	usia D2O5 lba/fa-	2 × 0 6 cr 0 9 -	available D2O51
P is 80% available when applied frequently, 60% available when applied interpretation Predicted method, form, and timing of application:	requently (anal)	1318 FZU3 IDS/(01	1 X U.U UI U.0 =	avaliable P200)
redicted method, form, and thining of application.				
Applied with spreader truck in fall or spring				

Manure Application - Rate Lutermination Sheet		4		
	Field:	3		
AGPRO fessionals, LLC	Farm:	Booth-Milliken	-	
DEVELOPERS OF AGRICULTURE				
1. Field Information:				
Crop: Alfalfa ▼ Crop Year: 2014 ▼	Acres:	146		
Soil name/texture: Loam Through 2016	Previous Cro	. Corn	_	
Soil test results Date N(as NO3-N), ppm P (Olsen),	ppm	K (NH4OAc),	ppm	pН
3/7/2012 20.6 7		110		8
P-Index Score N/A (low soil P) Application rate based upon	n Nitrogen	<u>-</u>		
2. Nutrient Needs:			N1 (11 / N	D-0- (II /)
a) Expected yield (avg. of last 5 yrs + 5%) 5.23 Tons, Lbs	or Bu. / Acre		N (lb/acre)	P2O5 (lb/a)
b) Nutrient recommendations	0. 24.77.0.0	>	274	150
Formula Used: (((YG*2000)*(%Protein/6.25)*(0.6))/0.66)				
CSU Soil Publication # 0.565				
c) Special nutrient needs above recommendations		_		
d) Total nutrient needs		_	274	150
3. Nitrogen Credits:				
		-		
a) Residual soil nitrate credit* (1 foot for grass, 2 feet for all others)	20.6	ppm NO3 _	74 0	
b) Irrigation water credit (2.7 lb N per ac-ft x ppm NO3-N x ac-ft) af= c) Previous legume crop (see Table 11 in CSU Bulletin NO. 568A)	0 0	ppm NO3		
d) Previous manure application credit (applic rate x org N x % min)		_		
Previous Year LBS Organic N Applied	400	10% avail	40	
e) Other:				
f) Total nitrogen credit		-	114	
*if not included in 2b above. Do not use N credits twice, ie. From tables 7a-				
*residual nitrate ppm is a total value for depth indicated, or a weighted avera 4. Recommended Nutrient Application Rate:	ige of the top 2 i	eet then double	d for corn and s	orghum crops
4. Recommended Numeric Application Nate.		-		
a) Total nutrient need minus Total nutrient credit (lb/acre)		_	160	150
Sample ID: Milliken Lab #: 19255				
	_			
Application Method: Broadcast manure w/o incorp ▼	_			
b) Expected NH3-N volatilization 10	0 %			
	4 lbs/Ton			
d) Expected mineralization rate 2	5 %			
	2 lbs/Ton		4.0	
f) Total available N ([c x {1-b}] + [d x e]) Recommended manure application rate (a/f)	_lbs/Ton	Ton/acre	4.6 35	
The second state of the second state (211)		_		
	w		D-0	004
g) P2O5 available 9.52 lbs/Ton Analysis 11.9 h) Additional P2O5 needs from commercial fertilizer -18	_ lbs/Ton 4 lbs/acre	II.	os P2O5/acre	334
P is 80% available when applied frequently, 60% available when applied infi		sis P2O5 lbs/tor	0.6 or 0.8 = 8	available P2O5)
Predicted method, form, and timing of application:				
Manufa not likely to be applied by tife - 1- f-11 f 2014	na anreadt	ale.		
Manure not likely to be applied, but if so, in fall for 2014 crop, usi	ng spreader trut			

Wastewater Application - ate Determination Sheet	 -			
	Field:	4		
AGPRO fessionals, LLC	Farm:	Booth-Milliken	-	
1. Field Information:				1
Crop: Corn ▼ Crop Year: 2012 ▼	Acres:	143		/
Soil name/texture: Loam ▼	Previous Cro	2000	-	
Soil test results Date N(as NO3-N), ppm P (Olsen), p 3/7/2012 29.1 56		K (NH4OA 6	c), ppm	pH 7.9
P-Index Score10 Application rate based upon	Nitrogen	_		
2. Nutrient Needs:				
a) Expected yield (avg. of last 5 yrs + 5%) 238 Tons, Lbs or	Bu. / Acre		N (lb/acre)	P2O5 (lb/a)
b) Nutrient recommendations	Ba. / / toro		314	0
Formula Used: Olsen Laboratory Recommendations				
c) Special nutrient needs above recommendations				
d) Total nutrient needs			314	0
3. Nitrogen Credits:				
2000 000000000000000000000000000000000				
a) Residual soil nitrate credit* (1 foot for grass, 2 feet for all others) b) Irrigation water credit (2.7 lb N per ac-ft x ppm NO3-N x ac-ft) af=	29.1	ppm NO3	105	<u> </u>
c) Previous legume crop (see Table 11 in CSU Bulletin NO. 568A)	<u> </u>			_
d) Previous manure application credit (applic rate x org N x % min)	400	7400/!	40	-
Previous Year LBS Organic N Applied	400	10% avail	40	-
e) Other:				
f) Total nitrogen credit			145	=
*if not included in 2b above. Do not use N credits twice, ie. From tables 7a-7e and he *residual nitrate ppm is a total value for depth indicated, or a weighted average of the		doubled for corn	and sorghum cro	ps
4. Recommended Nutrient Application Rate:				-
a) Total nutrient need minus Total nutrient credit (lb/acre)			169	0
a) Total Hadion Hood Himae Total Hadion Groun (15/46/6)				
Sample ID: <u>Milliken</u> Lab #: <u>17434</u>	-			
Application method: Sprinkler				
b) Expected NH3-N volatilization 45	5 %			
	5 lbs/1000 gal			
d) Expected mineralization rate 30	2 %			
e) Organic N available from manure 0.38 f) Total available N ([c x {1-b}] + [d x e])	3 lbs/1000 gal lbs/1000 gal		0.5	
Recommended manure application rate (a/f)	ibs/1000 gai	Gal/acre	321,443	
		ac-in/acre	11.7	
g) P2O5 available 0.30 lbs/1000 gal Analysis 0.37 h) Additional P2O5 needs from commercial fertilizer	_lbs/1000 gal		lbs P2O5/acre	95
P is 80% available when applied frequently, 60% available when applied infrequently		lbs/ton x 0.6 or	0.8 = available P2	205)
Predicted method, form, and timing of application:				
Applied through pivot in spring, summer or fall				

Manure Application - Rate Latermination Sheet		3		
	Field:	4		
AGPRO fessionals, LLC	Farm:	Booth-Milliken	-	
DEVELOPERS OF AGRICULTURE	i aiiii.	DOOG! Plillike!!		
1. Field Information:				
Crop: Corn ▼ Crop Year: 2012 ▼	4	440		
	Acres:	143 Corn	-	
Soil name/texture: Loam Soil test results Date N(as NO3-N), ppm P (Olsen).	Previous Cro	ρ.		-11
Soil test results Date N(as NO3-N), ppm P (Olsen), 3/7/2012 29.1 56	ppm	K (NH4OAc), 337	ppm	pH 7.9
P-Index Score10 Application rate based upor	Nitrogen	_		
2. Nutrient Needs:				
a) Expected yield (sup of leat 5 are 1.5%)	D / A		N (lb/acre)	P2O5 (lb/a)
a) Expected yield (avg. of last 5 yrs + 5%)	or Bu. / Acre		314	o
Formula Used: Olsen Laboratory Recommendations		-	014	
a) Special putricut peeds shows recommendations				
c) Special nutrient needs above recommendations d) Total nutrient needs		_	314	0
-, 1000 1000		_	- 014	
3. Nitrogen Credits:				
a) Posidual cail mitrate and it // foot for annual Office for all all and		¬	405	
a) Residual soil nitrate credit* (1 foot for grass, 2 feet for all others) b) Irrigation water credit (2.7 lb N per ac-ft x ppm NO3-N x ac-ft) af=	29.1	ppm NO3 _	105 0	
c) Previous legume crop (see Table 11 in CSU Bulletin NO. 568A)	0			
d) Previous manure application credit (applic rate x org N x % min)				
Previous Year LBS Organic N Applied	400	10% avail	40	
e) Other: f) Total nitrogen credit			145	
*if not included in 2b above. Do not use N credits twice, ie. From tables 7a-7	o and here	_	145	
*residual nitrate ppm is a total value for depth indicated, or a weighted avera		feet then double	d for corn and s	sorahum crops
4. Recommended Nutrient Application Rate:	,			
c) Total putriant need minus Total mutriant and it (lb/care)		_	400	
a) Total nutrient need minus Total nutrient credit (lb/acre)		_	169	0
Sample ID: Milliken Lab #: 19255				
	-			
Application Method: Broadcast manure w/o incorp ▼	_			
h) Expected NH2 N veletilization	2.0/			
)_% 1 lbs/Ton			
	5 %			
	2 lbs/Ton			
f) Total available N ([c x {1-b}] + [d x e])	_lbs/Ton		4.6	
Recommended manure application rate (a/f)		e, max allowed	37	
		ecommended		tons/a
g) P2O5 available 9.52 lbs/Ton Analysis 11.9	lbs/Ton	ecommended Ib	s P2O5/acre	lbs N/a 190
Mile	lbs/acre	10		
P is 80% available when applied frequently, 60% available when applied infr		sis P2O5 lbs/ton	x 0.6 or 0.8 = 8	available P2O5)
Predicted method, form, and timing of application:				
Applied with spreader truck in fall or spring				
				1

Wastewater Application - Ite Determination She	et			
	Field:	4		
AGPRO fessionals, LLC	Farm:	Booth-Milliken	-	
DEVELOPERS OF AGRICULTURE				
1. Field Information:				
Crop: Alfalfa ▼ Crop Year: 2013 ▼	Acres:	143		
Soil name/texture: Loam Through 2016	Previous Crop	.: Corn	-	
Soil test results Date N(as NO3-N), ppm P (Olsen)		K (NH4OAc	e), ppm	рН
3/7/2012 29.1 56	±00 = 01 = 01 = 000000	337		7.9
P-Index Score10 Application rate based upon	on Nitrogen	_		
2. Nutrient Needs:				
a) Expected yield (avg. of last 5 yrs + 5%) 5.23 Tons, Lbs	or Bu. / Acre		N (lb/acre)	P2O5 (lb/a)
b) Nutrient recommendations	or Ba. 7 Nore		274	0
Formula Used: (((YG*2000)*(%Protein/6.25)*(0.6))/0.66)				
CSU Soil Publication # 0.565				
c) Special nutrient needs above recommendations				
d) Total nutrient needs			274	0
3. Nitrogen Credits:				
o. maggin ordano.				
a) Residual soil nitrate credit* (1 foot for grass, 2 feet for all others)	29.1	ppm NO3	105	
b) Irrigation water credit (2.7 lb N per ac-ft x ppm NO3-N x ac-ft) af= c) Previous legume crop (see Table 11 in CSU Bulletin NO. 568A)	0 0	_ppm NO3	0	
d) Previous manure application credit (applic rate x org N x % min)				·
Previous Year LBS Organic N Applied	400	10% avail	40	
e) Other:				
f) Total nitrogen credit			145	
*if not included in 2b above. Do not use N credits twice, ie. From tables 7a-7e and				
*residual nitrate ppm is a total value for depth indicated, or a weighted average of t 4. Recommended Nutrient Application Rate:	he top 2 feet then d	oubled for corn	and sorghum crop	os
The second of th				
a) Total nutrient need minus Total nutrient credit (lb/acre)			129	0
Sample ID: Milliken Lab #: 17434				
Application method: Sprinkler				
b) Expected NH3-N volatilization	45 %			
	.75 lbs/1000 gal			
	30 %			
e) Organic N available from manure f) Total available N ([c x {1-b}] + [d x e])	.38 lbs/1000 gal lbs/1000 gal		0.5	
Recommended manure application rate (a/f)	ibar 1000 gai	Gal/acre	245,208	
		ac-in/acre	8.9	
g) P2O5 available 0.30 lbs/1000 gal Analysis 0.37	lbs/1000 gal		lbs P2O5/acre	73
h) Additional P2O5 needs from commercial fertilizer	0 lbs/acre		ibs i 200/acre	- 10
P is 80% available when applied frequently, 60% available when applied infrequen	tly (analysis P2O5 l	bs/ton x 0.6 or	0.8 = available P2	O5)
Predicted method, form, and timing of application:				
Applied through pivot in spring, summer or fall				

Wastewater Application - Ite Determination S	heet			
	Field:	5		
AGPRO fessionals, LLC	Farm:	Booth-Milliken	▼	
DEVELOPERS OF AGRICULTURE				
1. Field Information:				
Crop: Alfalfa ▼ Crop Year: 2012 ▼	Acres:	146		
Soil name/texture: Loam ▼ through 2016	Previous Crop		<u> </u>	
promotions (200 Adjusted to 200 Adjusted to 20	en), ppm	K (NH4OAc	e), ppm	рН
3/7/2012 21.8 7	2	355		8
Director Seems 7 Application and beauti	N!!			
P-Index Score 7 Application rate based	upon Nitrogen	-		
2. Nutrient Needs:			110111111111111111111111111111111111111	202200
a) Expected yield (avg. of last 5 yrs + 5%) 5.23 Tons, I	Lbs or Bu. / Acre		N (lb/acre)	P2O5 (lb/a)
b) Nutrient recommendations	LDS OF BU. / ACIE		274	0
Formula Used: (((YG*2000)*(%Protein/6.25)*(0.6))/0.66)				
CSU Soil Publication # 0.565				
c) Special nutrient needs above recommendations				
d) Total nutrient needs			274	0
3. Nitrogen Credits:				
		_		
a) Residual soil nitrate credit* (1 foot for grass, 2 feet for all others) b) Irrigation water credit (2.7 lb N per ac-ft x ppm NO3-N x ac-ft) af=	0 0	ppm NO3	78 0	
c) Previous legume crop (see Table 11 in CSU Bulletin NO. 568A)	0 0	Тьын иоз		
d) Previous manure application credit (applic rate x org N x % min)		7		'
Previous Year LBS Organic N Applied	400	10% avail	40	
e) Other:				
f) Total nitrogen credit			118	
*if not included in 2b above. Do not use N credits twice, ie. From tables 7a-7e *residual nitrate ppm is a total value for depth indicated, or a weighted average		oubled for corn	and sorahum cror	25
4. Recommended Nutrient Application Rate:	of the top 2 feet their d	Sabiou for com	and conginant or op	
a) Total nutrient need minus Total nutrient credit (lb/acre)			155	0
			100	- 0
Sample ID: <u>Milliken</u> Lab #: <u>174</u>	134			
Application method: Sprinkler ▼				
Application method.				
b) Expected NH3-N volatilization	45 %			
c) NH4-N available from manure d) Expected mineralization rate	0.75 lbs/1000 gal			
e) Organic N available from manure	0.38 lbs/1000 gal			
f) Total available N ([c x {1-b}] + [d x e])	lbs/1000 gal	0.11	0.5	
Recommended manure application rate (a/f)		Gal/acre ac-in/acre	295,122 10.7	
				KONANO
g) P2O5 available 0.30 lbs/1000 gal Analysis 0.3	37 lbs/1000 gal 0 lbs/acre		lbs P2O5/acre	87
h) Additional P2O5 needs from commercial fertilizer P is 80% available when applied frequently, 60% available when applied infreq		bs/ton x 0.6 or	0.8 = available P2	O5)
Predicted method, form, and timing of application:	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
Applied through pivet in apping accommon or fall				
Applied through pivot in spring, summer or fall				

Wastewater Application - Ite	Determinatio	n Sheet				
			Field:	6		
AGPRO fessionals,	HC		Farm:	Booth-Milliken	-	
DEVELOPERS OF AGRICULTURE	LEG					
1. Field Information:						
Crop: Alfalfa ▼ Crop	Year: 2012 ▼		Acres:	82		
Soil name/texture: Loam ▼	through 2014	1	Previous Crop	Alfalfa		
Soil test results Date N(as NC	03-N), ppm P	(Olsen), pp	m	K (NH4OAc), ppm	pН
11/2/2011 10.	3	103		397		8
	Application rate ba	ased upon ₋	Nitrogen	-:		
2. Nutrient Needs:					N (lb/acre)	P2O5 (lb/a)
a) Expected yield (avg. of last 5 yrs + 5%)	5.23 To	ons, Lbs or E	Bu. / Acre		274	0
b) Nutrient recommendations Formula Used: (((YG*2000)*(%Prot	ein/6.25)*(0.6))/0.6	6)			274	0
CSU Soil Publication		-,				
c) Special nutrient needs above recommendate	ions					
d) Total nutrient needs	10115				274	0
3. Nitrogen Credits:						
a) Residual soil nitrate credit* (1 foot for grass	, 2 feet for all other	s)	10.3	ppm NO3	37	_
b) Irrigation water credit (2.7 lb N per ac-ft x ppm No		0	0	ppm NO3	00	-
c) Previous legume crop (see Table 11 in CSUd) Previous manure application credit (applic rates)		()				
II 37	ear LBS Organic N App	lied	0	10% avail	0	_
e) Other:						
f) Total nitrogen credit					37	
*if not included in 2b above. Do not use N credits tv						
*residual nitrate ppm is a total value for depth indica 4. Recommended Nutrient Application Rate		erage of the to	op 2 feet then do	oubled for corn	and sorghum cro	os
- Recommended Nation Application Nation						*
a) Total nutrient need minus Total nutrient cre	dit (lb/acre)				237	0
Sample ID: Milliken	Lab #:	17434				
Application method: Sprinkler	<u> </u>					
b) Expected NH3-N volatilization		45	%			
c) NH4-N available from manure	-		lbs/1000 gal			
d) Expected mineralization rate e) Organic N available from manure		0.38	% lbs/1000 gal			
f) Total available N ([c x {1-b}] + [d x e])			lbs/1000 gal		0.5	
Recommended manure application rate (a/f)			Gal/acre	449,728	
				ac-in/acre	16.3	
g) P2O5 available 0.30 lbs/1000	gal Analysis	0.37	lbs/1000 gal		lbs P2O5/acre	133
h) Additional P2O5 needs from commercial fe			lbs/acre			
P is 80% available when applied frequently, 60% av		infrequently (analysis P2O5 II	bs/ton x 0.6 or	0.8 = available P2	?O5)
Predicted method, form, and timing of application	HOII.					
Applied through pivot in spring, s	ummer or fall					

Manure Application - Rate	termination SI	neet			
		Field:	6		
\triangle CDDO		Farm:	Booth-Milliken	_	
AGPRO fessional	ls, LLC	ı aiii.	BOOUT-Millikell		
1. Field Information:					
Crop: Corn ▼ Crop	Year: 2015 ▼	Acres:	82		
	Year: 2015 ▼	J		-	
Soil name/texture: Loam ▼	NO ₃ -N), ppm	Previous Crop P (Olsen), ppm	K (NH4OAc),		pН
	10.3	103	397	ppiii	8
P-Index Score11	Application rate b	pased upon Nitrogen			
2. Nutrient Needs:				NI (lb/sers)	DoOs (lb/a)
a) Expected yield (avg. of last 5 yrs + 5%)	238	Tons, Lbs or Bu. / Acre		N (lb/acre)	P2O5 (lb/a)
b) Nutrient recommendations		,		314	0
Formula Used: Olsen Laboratory Re	ecommendations				
c) Special nutrient needs above recommend	fations				
d) Total nutrient needs				314	0
0 Nii 0 Nii					
3. Nitrogen Credits:					
a) Residual soil nitrate credit* (1 foot for gra	ss, 2 feet for all othe	rs) 10.3	ppm NO3	37	9
b) Irrigation water credit (2.7 lb N per ac-ft x ppm		0 0	ppm NO3	0	
c) Previous legume crop (see Table 11 in Cod) Previous manure application credit (applic		A)			
	us Year LBS Organic N A	applied 0	10% avail	0	
			_		
e) Other: alfalfa credit				65 102	
f) Total nitrogen credit *if not included in 2b above. Do not use N cr	redits twice ie From	tables 7a-7e and here	_	102	8
*residual nitrate ppm is a total value for depti			eet then doubled	d for corn and s	sorghum crops
4. Recommended Nutrient Application Ra					0
a) Total nutrient need minus Total nutrien	t credit (lh/acre)		-	212	0
a) Total nutrient need minus Total nutrien	(ibracie)		-	212	0
Sample ID: Milliken	Lab #:	19255			
Application Method: Broad	cast manure w/o incorp	▼			
b) Expected NH3-N volatilization		100 %			
c) NH4-N available from manure		1.14 lbs/Ton			
d) Expected mineralization rate		25 %			
e) Organic N available from manure		18.2 lbs/Ton lbs/Ton		4.6	
f) Total available N ([c x {1-b}] + [d x e]) Recommended manure application rate (a	a/f)		, max allowed	47	
	•	Manure, re	commended —		tons/a
N POOF			commended		lbs N/a
g) P2O5 available 9.52 lbs/Teh) Additional P2O5 needs from commercial f		11.9 lbs/Ton -190 lbs/acre	Ib	s P2O5/acre	190
P is 80% available when applied frequently,	12		sis P2O5 lbs/ton	x 0.6 or 0.8 =	available P2O5)
Predicted method, form, and timing of applic					
2 10 1 120 10 10 10 10 10 10 10 10 10 10 10 10 10					
Applied with spreader truck in fall	or spring				

M	anure Application - Rate	termination S	Sheet		31		
	1.1			Field:	6		
7	Λ_{CDDO}			Farm:	Booth-Milliken	_	
	AGPRO fession	nals, LLC		ı amı.	DOUGI-PHINKETI		
1.	Field Information:						
_	- C	ron Voor	_1	Across	92		
Cro		rop Year: 2016	▼]	Acres:	. Corn	~	
-	I name/texture: Loam ▼ I test results Date N	(as NO ₃ -N), ppm	P (Olsen), p	Previous Crop	K (NH4OAc),		рН
30	11/2/2011	10.3	103	phii	397	ppiii	8
		10.0	100				
	P-Index Score11	Application rate	based upon	Nitrogen	_		
2.	Nutrient Needs:					N1 (1b /=)	DoOs (Ib/s)
2/	Expected yield (avg. of last 5 yrs + 5%)	238	Tons, Lbs o	r Bu / Acre		N (lb/acre)	P2O5 (lb/a)
	Nutrient recommendations		_ 1013, LD3 0	Bu. / More		314	0
		y Recommendations			_		
(2)	Special nutrient needs above recomm	endations					
	Total nutrient needs	Cridations			_	314	0
ľ							
3.	Nitrogen Credits:						
2/	Residual soil nitrate credit* (1 foot for	grass 2 feet for all oth	ers)	10.3	ppm NO3	37	
	Irrigation water credit (2.7 lb N per ac-ft x		0	0	ppm NO3	0	
	Previous legume crop (see Table 11 in		8A)				
d)	Previous manure application credit (ap	oplic rate x org N x % min)			-		
	Pr	evious Year LBS Organic N	Applied	400	10% avail	40	.5
0	Other:						
	Cotal nitrogen credit					77	
11 .	not included in 2b above. Do not use I	N credits twice, ie. Fro	m tables 7a-7	and here.	-		
*re	sidual nitrate ppm is a total value for d	epth indicated, or a we	eighted averag	e of the top 2 fe	eet then double	d for corn and	sorghum crops
4.	Recommended Nutrient Application	Rate:			_		es.
a)	Total nutrient need minus Total nutr	rient credit (lb/acre)			_	237	0
,	Total Hadrent Hood Himas Total Had	ione or oute (ib/dolo)			_	201	
	Sample ID: Millike	enLab#	: 19255				
				•			
	Application Method: B	roadcast manure w/o incorp					
b)	Expected NH3-N volatilization		30	%			
	NH4-N available from manure			lbs/Ton			
	Expected mineralization rate		25				
(e)	Organic N available from manure		18.2	lbs/Ton			
f) '	Total available N ([c x {1-b}] + [d x e])			lbs/Ton	_	5.3	
Re	commended manure application rat	e (a/f)			max allowed _	44	
					commended		tons/a
(C)	P2O5 available 9.52 lb	s/Ton Analysis	11.9	fertilizer, red lbs/Ton		144.9 bs P2O5/acre	lbs N/a 190
(h)	Additional P2O5 needs from commerc			lbs/acre	"	JO I LOUISOITE	100
	s 80% available when applied frequent		n applied infre	quently (analys	is P2O5 lbs/tor	0.6 or 0.8 =	available P2O5)
	dicted method, form, and timing of ap						
	Applied with spreader truck in	tall or spring					
11							

Wastewater Application - Ite De	termination	n Sheet				V.=
			Field:	7		
AGPRO fessionals, L.	LC		Farm:	Booth-Milliken	▼	
1. Field Information:						
Crop: Alfalfa ▼ Crop Yea	er: 2012		Acres:	69		
Soil name/texture: Loam	through 2014		Acres. Previous Crop		-	
Soil test results Date N(as NO3-		(Olsen), pp		K (NH4OAc	e), ppm	рН
11/2/2011 14.3	,,,,	86		425	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	7.8
040455 S28500 8 1835 B						
P-Index Score11 Ap	olication rate ba	ased upon _	Nitrogen	-		
2. Nutrient Needs:					N (lb/acre)	P2O5 (lb/a)
a) Expected yield (avg. of last 5 yrs + 5%)	5.23 To	ons, Lbs or E	Bu. / Acre		iv (ib/acre)	F203 (Ib/a)
b) Nutrient recommendations					274	0
Formula Used: (((YG*2000)*(%Protein CSU Soil Publication #		6)				
OSO GOILL ADHORITOR #	0.303					
c) Special nutrient needs above recommendation	IS				274	0
d) Total nutrient needs					2/4	0
3. Nitrogen Credits:						
a) Residual soil nitrate credit* (1 foot for grass, 2	feet for all others	۰، ۲	14.3	ppm NO3	51	
b) Irrigation water credit (2.7 lb N per ac-ft x ppm NO3-		0	0	ppm NO3	0	•
c) Previous legume crop (see Table 11 in CSU B)		-		
d) Previous manure application credit (applic rate x	org N x % min) ·LBS Organic N Appl	lied [0	10% avail	0	
Previous real	LB3 Organic N Appr	ileu		10% avail		-
e) Other:						
f) Total nitrogen credit *if not included in 2b above. Do not use N credits twice	ia From tobles 7	'a 7a and har			51	
*residual nitrate ppm is a total value for depth indicated				oubled for corn	and sorghum cro	ps
4. Recommended Nutrient Application Rate:			•			
a) Total nutrient need minus Total nutrient credit	(lb/acre)				222	0
	(
Sample ID: Milliken	Lab #:	17434				
Application method: Sprinkler						
		5000000000	xitare.			
b) Expected NH3-N volatilization c) NH4-N available from manure		45	% lbs/1000 gal			
d) Expected mineralization rate	-	30				
e) Organic N available from manure	-		bs/1000 gal			
f) Total available N ([c x {1-b}] + [d x e])		J	bs/1000 gal	Callagae	0.5	
Recommended manure application rate (a/f)				Gal/acre ac-in/acre	422,378 15.3	
						ANABARDI I
g) P2O5 available 0.30 lbs/1000 ga h) Additional P2O5 needs from commercial fertilia	al Analysis		bs/1000 gal		Ibs P2O5/acre	125
P is 80% available when applied frequently, 60% available				s/ton x 0.6 or	0.8 = available P2	205)
Predicted method, form, and timing of application		, , , ,				
Applied the second of the second of						
Applied through pivot in spring, sum	mer or tall					

Manure Application - Rate	termination SI	neet		A 		
			Field:	7		
AGPRO fession			Farm:	Booth-Milliken	-	
DEVELOPERS OF AGRICULTURE	als, LLC		. «	200011111111111		
1. Field Information:						
Crop: Corn ▼ Cro	op Year: 2015	7	Acres:	69		
Soil name/texture: Loam	op rear. 2015 •		Previous Crop		-	
	as NO ₃ -N), ppm	P (Olsen), p		K (NH4OAc),	ppm	pH
11/2/2011	14.3	86		425		7.8
P-Index Score11	Application rate b	pased upon	Nitrogen	_		
2. Nutrient Needs:						
	000	-	D / A		N (lb/acre)	P2O5 (lb/a)
a) Expected yield (avg. of last 5 yrs + 5%) b) Nutrient recommendations	238	Tons, Lbs or	Bu. / Acre		314	0
	Recommendations			11		
c) Special nutrient needs above recomme	endations					
d) Total nutrient needs	maadono				314	0
3. Nitrogen Credits:						
a) Residual soil nitrate credit* (1 foot for g	rass, 2 feet for all other	rs)	14.3	ppm NO3	51	- 77
b) Irrigation water credit (2.7 lb N per ac-ft x p	[1] [1] [1] [1] [1] [1] [1] [1] [1] [1]	0	0	ppm NO3	0	
c) Previous legume crop (see Table 11 in d) Previous manure application credit (app		A)				
	evious Year LBS Organic N A	applied	0	10% avail	0	
						•
e) Other: alfalfa f) Total nitrogen credit					65 116	
*if not included in 2b above. Do not use N	I credits twice, ie. From	tables 7a-7e	and here.	_	110	• E
*residual nitrate ppm is a total value for de	epth indicated, or a weig			eet then double	d for corn and	sorghum crops
4. Recommended Nutrient Application	Rate:					•0
a) Total nutrient need minus Total nutri	ent credit (lb/acre)				198	0
Landard Control of Con				_		
Sample ID: Millike	<u>n</u> Lab #:	19255				
Application Method: Bro	padcast manure w/o incorp	-				
b) Expected NH3-N volatilization	,	100	% lbs/Ton			
c) NH4-N available from manure d) Expected mineralization rate		25				
e) Organic N available from manure	9 8		lbs/Ton			
f) Total available N ([c x {1-b}] + [d x e]) Recommended manure application rate	(a)f)		lbs/Ton	, max allowed	4.6 43	
Recommended manure application rate	, (a/1)			commended _		tons/a
			fertilizer, re	commended		lbs N/a
g) P2O5 available 9.52 lbs h) Additional P2O5 needs from commercia	s/Ton Analysis		lbs/Ton lbs/acre	It	s P2O5/acre	190
P is 80% available when applied frequently				sis P2O5 lbs/tor	x 0.6 or 0.8 =	available P2O5)
Predicted method, form, and timing of app						<u>.</u>
Applied with spreader truck in	all or spring					
II .						

Manure Application - Rate	termination S	heet				
			Field:	7		
AGPRO fession	1 110		Farm:	Booth-Milliken		
DEVELOPERS OF AGRICULTURE	ials, LLC					
1. Field Information:						
Crop: Corn ▼ C	rop Year: 2016	-	Acres:	69		
Soil name/texture: Loam			Previous Crop	Corn	-	
	(as NO ₃ -N), ppm	P (Olsen), p	pm	K (NH4OAc),	ppm	pН
11/2/2011	14.3	86		425		7.8
P-Index Score11	Application rate	based upon	Nitrogen	<u>-</u> -		
2. Nutrient Needs:						D.O. (11.1.)
a) Expected yield (avg. of last 5 yrs + 5%)	238	Tons, Lbs or	Bu / Acre		N (lb/acre)	P2O5 (lb/a)
b) Nutrient recommendations		_ 10110, 250 01	Du. / / (0/0	_	314	0
Formula Used: Olsen Laboratory	y Recommendations					
c) Special nutrient needs above recomm	endations			<u></u>		
d) Total nutrient needs				_	314	0
3. Nitrogen Credits:						
				-		
 a) Residual soil nitrate credit* (1 foot for b) Irrigation water credit (2.7 lb N per ac-ft x 		ers)	14.3	ppm NO3	51 0	88
c) Previous legume crop (see Table 11 ir		U U	- 0		- 0	
d) Previous manure application credit (ap	plic rate x org N x % min)		2000	7		
Pr	evious Year LBS Organic N	Applied	400	10% avail	40	e:
e) Other:						
f) Total nitrogen credit			and the state of t		91	12
*if not included in 2b above. Do not use I *residual nitrate ppm is a total value for d	경기 이번 이번 하면 하면 보다면 하는 사람들이 살아가지 않아 없다.			eet then doubled	d for corn and	sorahum crons
4. Recommended Nutrient Application		grited average	or the top 2 h	set their doubled	TO COM and	sorgnam crops
a) Total nutrient need minus Total nutr	iant anadit (lb/aara)			_	223	0
a) Total nutrient need minus Total nutr	ient credit (ib/acre)			-	223	U
Sample ID: Millike	enLab#:	19255				
Application Method: Br	roadcast manure w/o incorp	-				
Аррисацоп меціоц.	odddas manare nyo meorp					
b) Expected NH3-N volatilization		100				
c) NH4-N available from manure d) Expected mineralization rate		1.14	lbs/Ton %			
e) Organic N available from manure			lbs/Ton			
f) Total available N ([c x {1-b}] + [d x e])			lbs/Ton		4.6	
Recommended manure application rat	e (a/t)			, max allowed commended	49	tons/a
			[18] [18] [18] [18] [18] [18] [18] [18]	commended		lbs N/a
g) P2O5 available 9.52 lb h) Additional P2O5 needs from commerc	s/Ton Analysis	11.9	lbs/Ton	lb	s P2O5/acre	190
P is 80% available when applied frequent			Ibs/acre	sis P2O5 lbs/ton	x 0.6 or 0.8 =	available P2O5)
Predicted method, form, and timing of ap		. approarimo				
V2 No. 25 Mars No. 25 No. 25 No. 25	\$00.000000 BO					
Applied with spreader truck in	tall or spring					
II .						

Wastewater Application - ate Determination Sheet		
Field: 8	3	
AGPRO fessionals, LLC Farm: Booth-Milliker	▼	
DEVELOPERS OF AGRICULTURE		
1. Field Information:		
1. Field information.		
Crop: Alfalfa ▼ Crop Year: 2012 ▼ Acres: 130)	
Soil name/texture: Loam Through 2014 Previous Crop:		
Soil test results Date N(as NO3-N), ppm P (Olsen), ppm K (NH4OA	c), ppm p	Н
11/2/2011 7.4 88 366	7	.9
P-Index Score11 Application rate based upon Nitrogen		
2. Nutrient Needs:		
	N (lb/acre)	205 (lb/a)
a) Expected yield (avg. of last 5 yrs + 5%)5.23 Tons, Lbs or Bu. / Acre b) Nutrient recommendations	274	0
Formula Used: (((YG*2000)*(%Protein/6.25)*(0.6))/0.66)	274	0
CSU Soil Publication # 0.565		
c) Special nutrient needs above recommendations		
d) Total nutrient needs	274	0
3. Nitrogen Credits:		
a) Residual soil nitrate credit* (1 foot for grass, 2 feet for all others) 7.4 ppm NO3	27	
b) Irrigation water credit (2.7 lb N per ac-ft x ppm NO3-N x ac-ft) af= 0 0 ppm NO3	0	
c) Previous legume crop (see Table 11 in CSU Bulletin NO. 568A) d) Previous manure application credit (applic rate x org N x % min)		
Previous Year LBS Organic N Applied 0 10% avail	0	
e) Other: f) Total nitrogen credit	27	
*if not included in 2b above. Do not use N credits twice, ie. From tables 7a-7e and here.		
*residual nitrate ppm is a total value for depth indicated, or a weighted average of the top 2 feet then doubled for corr	and sorghum crops	
4. Recommended Nutrient Application Rate:		
a) Total nutrient need minus Total nutrient credit (lb/acre)	247	0
2 1 12 4777		
Sample ID: Milliken Lab #: 17434		
Application method: Sprinkler		
45.00		
b) Expected NH3-N volatilization 45 % c) NH4-N available from manure 0.75 lbs/1000 gal		
d) Expected mineralization rate 30 %		
e) Organic N available from manure 0.38 lbs/1000 gal		
f) Total available N ([c x {1-b}] + [d x e]) lbs/1000 gal	0.5	
Recommended manure application rate (a/f) Gal/acre ac-in/acre	469,557 17.0	
ao-macre	17.0	
g) P2O5 available	lbs P2O5/acre _	139
h) Additional P2O5 needs from commercial fertilizer **P is 80% available when applied frequently, 60% available when applied infrequently (analysis P2O5 lbs/ton x 0.6 or	0.8 = available P2O	5)
Predicted method, form, and timing of application:	0.0 - available F20	<i>y</i>
Applied through pivot in spring, summer or fall		

Manure Application - Rate termination Sheet				
	Field:	8		
ACDDO	Farm:			
AGPRO fessionals, LLC	rann:	Booth-Milliken		
DEVELOPERS OF AGRICULTURE				
1. Field Information:				
	*	120300		
Crop: Corn ▼ Crop Year: 2015 ▼	Acres:	130		
Soil name/texture: Loam ▼	Previous Cro			
Soil test results Date N(as NO3-N), ppm P (Olse	n), ppm	K (NH4OAc),	ppm	pH
11/2/2011 7.4 88		366		7.9
P-Index Score11 Application rate based up	oon Nitrogen	_		
2. Nutrient Needs:				
a) Expected yield (avg. of last 5 yrs + 5%) 238 Tons, Lt	os or Bu. / Acre		N (lb/acre)	P2O5 (lb/a)
b) Nutrient recommendations	os of Bu. / Acre		314	0
Formula Used: Olsen Laboratory Recommendations		à 		
·				
c) Special nutrient needs above recommendations d) Total nutrient needs		_	314	0
dy rotal nation needs		_		
3. Nitrogen Credits:				
Desiduel esil electrone district and district for all electrones		7 NO2	07	
a) Residual soil nitrate credit* (1 foot for grass, 2 feet for all others) b) Irrigation water credit (2.7 lb N per ac-ft x ppm NO3-N x ac-ft) af=	0 0	ppm NO3 ppm NO3	27 0	<u>.</u> s
c) Previous legume crop (see Table 11 in CSU Bulletin NO. 568A)	0 0			-0
d) Previous manure application credit (applic rate x org N x % min)				
Previous Year LBS Organic N Applied	0	10% avail	0	- 01
e) Other: Alfalfa			65	
f) Total nitrogen credit			92	
*if not included in 2b above. Do not use N credits twice, ie. From tables 7	a-7e and here.	-		
*residual nitrate ppm is a total value for depth indicated, or a weighted ave	erage of the top 2	feet then double	d for corn and	sorghum crops
4. Recommended Nutrient Application Rate:		_		-
a) Total nutrient need minus Total nutrient credit (lb/acre)		-	222	0
Sample ID: Milliken Lab #: 1925	5			
Application Method: Broadcast manure w/o incorp ▼				
Application Method:				
b) Expected NH3-N volatilization	100 %			
c) NH4-N available from manure	1.14 lbs/Ton			
d) Expected mineralization rate	25 %			
e) Organic N available from manure f) Total available N ([c x {1-b}] + [d x e])	l8.2 lbs/Ton lbs/Ton		4.6	
Recommended manure application rate (a/f)		e, max allowed	49	
		ecommended -	20.0	tons/a
		ecommended		lbs N/a
g) P2O5 available 9.52 lbs/Ton Analysis 11.9 h) Additional P2O5 needs from commercial fertilizer	lbs/Ton 190 lbs/acre	11	os P2O5/acre	190
P is 80% available when applied frequently, 60% available when applied it		sis P2O5 lbs/tor	1 x 0.6 or 0.8 =	available P2O5)
Predicted method, form, and timing of application:	,, ()			/
Applied with spreader truck in fall or spring				

Manure Application - Rate Lermination She	et			
	Field:	8		
AGPRO fessionals, LLC	Farm:	Booth-Milliken	-	
DEVELOPERS OF AGRICULTURE				
1. Field Information:				
Crop: Corn ▼ Crop Year: 2016 ▼	Acres:	130		
Soil name/texture: Loam ▼	Previous Crop:	Corn	-	
	(Olsen), ppm	K (NH4OAc),	opm p	Н
11/2/2011 7.4	88	366	7.	.9
P-Index Score11 Application rate bas	sed upon Nitrogen	K.		
2. Nutrient Needs:				
a) Expected yield (avg. of last 5 yrs + 5%) 238 To	ons, Lbs or Bu. / Acre		N (lb/acre)	P2O5 (lb/a)
b) Nutrient recommendations	ins, Lbs of Bu. / Acre		314	0
Formula Used: Olsen Laboratory Recommendations		5. co		
c) Special nutrient needs above recommendations				
d) Total nutrient needs		-	314	0
3. Nitrogen Credits:				
 a) Residual soil nitrate credit* (1 foot for grass, 2 feet for all others)	7.4	ppm NO3	27	
b) Irrigation water credit (2.7 lb N per ac-ft x ppm NO3-N x ac-ft) af=	0 0	ppm NO3	0	
c) Previous legume crop (see Table 11 in CSU Bulletin NO. 568A)		1		
d) Previous manure application credit (applic rate x org N x % min)	ied 400	10% avail	40	
Previous Year LBS Organic N Appl	1ed 400	10% avail	40	
e) Other:				
f) Total nitrogen credit			67	
*if not included in 2b above. Do not use N credits twice, ie. From tall *residual nitrate ppm is a total value for depth indicated, or a weight		at than daublas	for earn and so	rahum crons
4. Recommended Nutrient Application Rate:	ed average of the top 2 fe	et trieri doubled	Tor corn and so	rgrium crops
a) Total nutrient need minus Total nutrient credit (lb/acre)		_	247	0
Sample ID: Milliken Lab #:	19255			
0.000.00				
Application Method: Broadcast manure w/o incorp	▼			
h) Expected NILIS Ni voletilization	100 %			
b) Expected NH3-N volatilization C) NH4-N available from manure	1.14 lbs/Ton			9)
d) Expected mineralization rate	25 %			
e) Organic N available from manure	18.2 lbs/Ton			
f) Total available N ([c x {1-b}] + [d x e]) Recommended manure application rate (a/f)	Ibs/Ton	max allowed	4.6 54	
ntecommended mandre application rate (arr)	Manure, rec		20.0 to	ns/a
	fertilizer, rec		155.4 lb	s N/a
g) P2O5 available 9.52 lbs/Ton Analysis	11.9 lbs/Ton	lb	s P2O5/acre	190
h) Additional P2O5 needs from commercial fertilizer P is 80% available when applied frequently, 60% available when applied frequently.	-190 lbs/acre	e P2O5 lhe/ton	x 0 6 or 0 8 = 31	ailahle P2O51
Predicted method, form, and timing of application:	phod ininequently (analysi	3 1 200 103/1011	2.0 01 0.0 - av	anabio i 200)
and the state of t				
Applied with spreader truck in fall or spring				